

# Launch Technology Ventures - Fall 2024

## Prototyping with AI Workshop

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### Prototyping with AI Workshop

Harvard Business School - Launch Technology Ventures - Fall 2024

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### Objectives

In this exercise, students will experiment using AI tools to further refine their proposed business models and prototype an artifact to get real customer feedback.

Your goals by the end of this exercise are to:

- 1) **Explore the possibilities** for prototyping enabled by the latest AI tools.
- 2) **Think critically about the trade-offs** of using AI in validating a business model.
- 3) **Build your facility and confidence in building with AI** tools, prototype, and increase your leverage beyond this class.

By the end of this exercise, you will:

- 1) **Augment and stress test your idea** using some LLM powered tools.
- 2) **Take a perspective on the trade-offs** of using those tools.
- 3) **Build, edit, and deploy** your own code to the internet with ChatGPT by learning and using the same tools that professional software developers use today (including VS Code and Github).

### Submissions

**Important:** Make sure to submit your work at each of the submission points linked here and at the checkpoints in the homework assignment.

Submission 1 - Reflections on Using AI for Product Market Fit

Submission 2 - Public App Link and Chat

Submission 3 - Reflections on Building with AI

Please make all submissions before:

**Sunday 10/27 at 11:59pm ET**

**Recommendation:** Start this assignment early, use ChatGPT, and plan to visit office hours, if you don't have a technical background.

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### Homework Assignment

#### Part 1: How Good is AI at Product Market Fit?

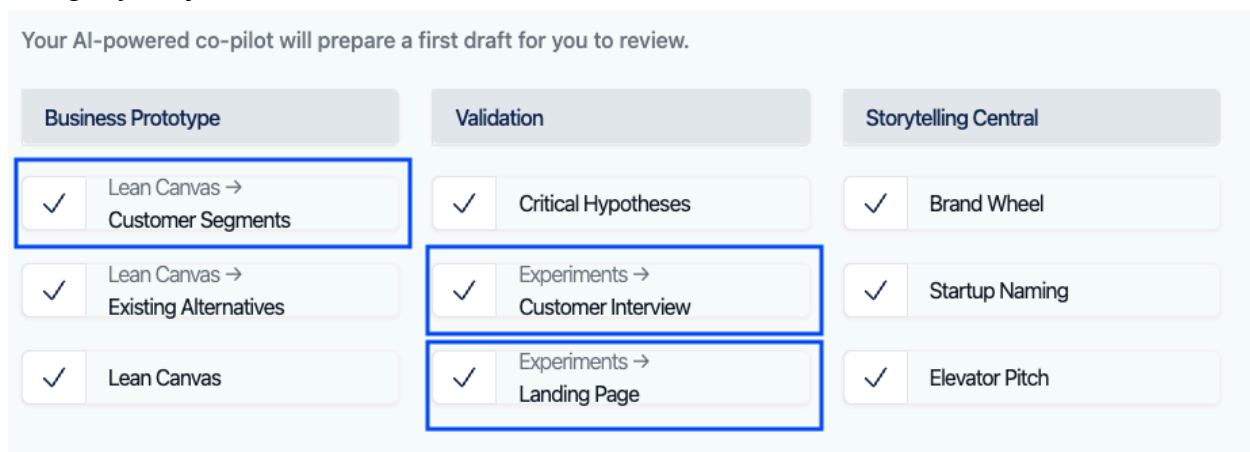
##### *Business model generation with SparkRockets*

You're going to augment your earlier business model work by using LLM generated outputs from the SparkRockets tool and evaluate the tradeoffs of using this type of tool:

#### Step 1: Augment your business model generation with LLMs

- 1) Sign up for a free account on [sparkrockets.com](https://sparkrockets.com).
- 2) Input a brief about your idea into the main text box and click the button to generate your business model outputs.
- 3) Save your key outputs to PDF for discussion:
  - a) Lean Canvas - Click Customer Segments. Print (Mac: Cmd+P, Windows: Ctrl+P) and save to PDF.
  - b) Interview Questionnaire - Click Customer Interview. Print (Mac: Cmd+P, Windows: Ctrl+P) and save to PDF.
  - c) Landing Page - Click Landing Page. Print and save to PDF (Mac: Cmd+P, Windows: Ctrl+P)
    - i) Bonus: Save the web page and assets for Part 2  
Right click somewhere on the webpage that is not an image.  
Click "Save As" and save the .html page and accompanying folder.  
(see screenshot below).

##### *Saving Key Outputs*



*Three key outputs to save.*

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*Right click on the landing page and click “Save As” to save the webpage and assets.*

### **Step 2: Compare and refine your current business model with SparkRockets**

- 1) Review your outputs from SparkRockets.
- 2) Mark down any changes or updates you make on your original business model.

**Checkpoint:** Fill out brief answers to the discussion questions here:

**Submission 1 - Reflections on Using AI for Product Market Fit**

### **Step 3: Discussion Questions**

*How does SparkRocket's AI generated outputs compare to those that you created on your own?*

*Did you make any changes to your assets based on SparkRockets' output?*

*What was your initial reaction to using SparkRockets for idea development? Did it help clarify your vision, or did you feel constrained by the tool?*

*What specific features of SparkRockets did you find most useful? Were there any templates, prompts, or features that particularly accelerated your thinking?*

*What challenges, if any, did you encounter when using SparkRockets?*

*In what ways did SparkRockets shape or change your idea as you fleshed it out? Did you discover new possibilities or run into roadblocks in your original concept?*

*What limitations did you observe in using a tool like SparkRockets compared to more traditional brainstorming or ideation methods without AI?*

*Do tools like SparkRockets have a place in ideation and product market fit? Where can you see it helping or hindering product market fit the most?*

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### Part 2: Code with AI

*Creating Your Own Landing Page With ChatGPT, VS Code, and Github*

You're going to build, edit, and deploy your own code to the internet with ChatGPT using VS Code and Github Pages - tools used by professional developers today - even if you have zero experience with software programming.

We'll provide two initial paths: either using ChatGPT (feel free to use one or multiple chat threads) or follow the manual instructions.

If you're experienced with web development, you can move quickly through this to [Part 3](#).

#### Step 0: Troubleshooting: Leveraging LLMs to Debug and Learn<sup>1</sup>

One of the best use cases for LLMs to build is to ask them for help when you run into errors (i.e. "bugs") and need to "debug" your program or issue. Here are some tips from ChatGPT to get you started:

*ChatGPT:* [Debugging Strategies with ChatGPT](#)<sup>2</sup>

```
How can I use ChatGPT to debug putting together a basic webpage with VS Code, basic HTML, CSS, JavaScript, and Github Pages when I run into errors?
```

```
What are suggestions of how to input information, errors, or other challenges when I sometimes am having trouble understanding how to articulate the problem?
```

```
Assume I do not know how to code.
```

If you get stuck, keep trying different questions and screenshots. You can also come to [virtual office hours](#).

#### Step 1: Set up your initial project

We're going to install Visual Studio Code (i.e. "VS Code") a text editor used by software engineers to edit code, create a project folder, and create our first html file, and test viewing it.

Here's an example prompt to get you started:

*ChatGPT:* [VS Code Project Setup](#)

---

<sup>1</sup> *ChatGPT:* [Why would a computer engineer start their instructions with "Step 0"?](#)

<sup>2</sup> OpenAI also has a more [technical guide on "prompt engineering"](#) and [Prompt Engineering Guide](#) goes in further depth.

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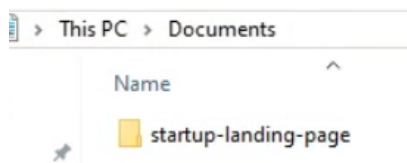
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*Assume that I am an MBA student that does not know how to code and you're an expert, patient front end engineer.*

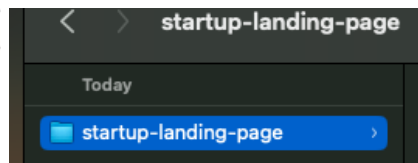
*Can you walk me through the steps to install a new version of VS Code, create a new project folder, and create an index.html file for a basic landing page website?*

*Alternatively, you can follow these manual instructions:*

- 1) Install Visual Studio Code (i.e. "VS Code"): [Visual Studio Code Download Link](#)
- 2) Create a new folder<sup>3</sup> in Windows Explorer (Windows) or Finder (Mac). You can name it anything you want. We called it "startup landing page" below.

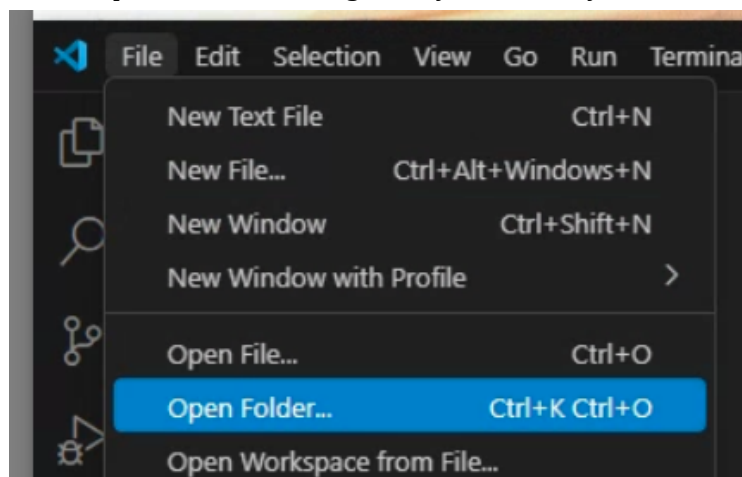


*Windows explorer.*



*Mac Finder.*

- 3) Open your folder in VS Code:
  - a) Open VS Code
  - b) File → Open Folder → Navigate to your recently created folder



- c) You should see the name of your folder and a blank section in the left hand side of your screen.

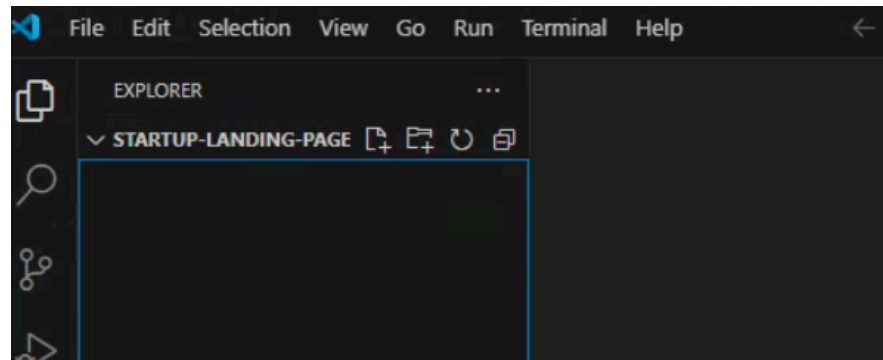
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<sup>3</sup> Folders are also sometimes called "[directories](#)."

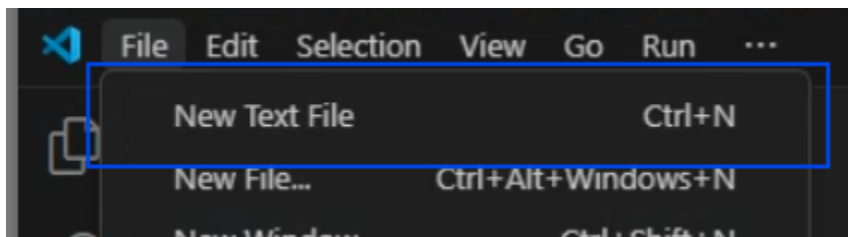
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- 4) Create the main page for your website.  
Create a new file. VS Code → File → New Text File



- 5) Save the file with the name **index.html**.<sup>4</sup> File → Save or Ctrl+S (Windows) or Cmd+S (Mac)  
Make sure to save the file inside of the folder you just created.
- 6) Generate your first HTML code<sup>5</sup> using ChatGPT.  
Copy and paste the code generated into the index.html file and save it with Ctrl+S (Windows) or Cmd+S (Mac).

Here is an example prompt:

*ChatGPT:* [Create a Startup Landing Page](#)

```
Assume you're an expert front end software engineer and you're developing a landing page for a new startup run by a non-technical MBA.  
  
For a new startup <enter your startup name here>  
  
Can you generate a landing page that I can test?  
  
Please give me the code all as one file.
```

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<sup>4</sup> ChatGPT: [What is an index.html file?](#)

<sup>5</sup> ChatGPT: [What is HTML, CSS, and JavaScript?](#)

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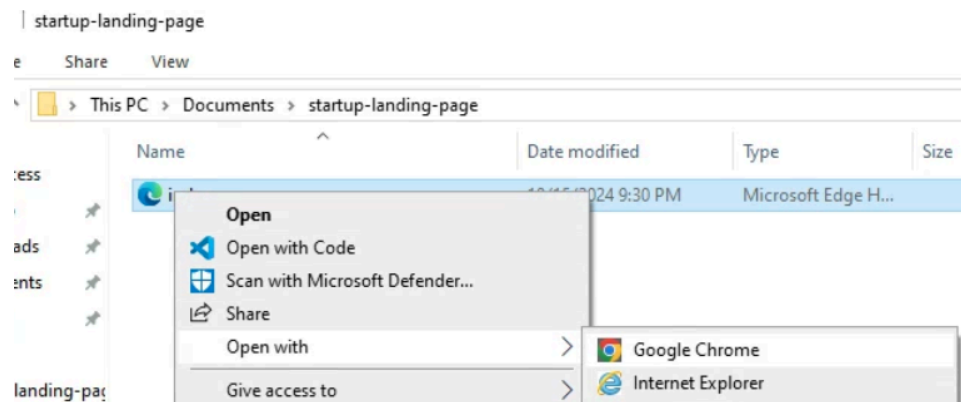
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7) Test your landing page.

Navigating to the file in Windows Explorer (Windows) or Finder (Mac)

Right click the file and “Open With” your preferred web browser (e.g. Chrome)



You should see your initial landing page up and running.

**Checkpoint:** You’ve got a working webpage running locally on your computer!

Take a closer look at the code that you copied into the index.html file. Notice that this is human readable. You should be able to see a `<title>` tag with the title of the webpage, a `<body>` tag with the main content of the web page, and potentially some code inside of a `<style>` tag that is referring to other elements in the page and adjusting their appearance.

We’re going to use ChatGPT to evolve this, but one of the best ways to gain leverage with ChatGPT is using it to learn more about the tasks you’re instructing it to accomplish.

The more you know about the actual thing that ChatGPT needs to do, the better you can instruct it in what to do.

What to learn more about HTML and CSS?

Here’s a an example prompt:

*ChatGPT:* [Basics of HTML and CSS for Non-technical MBAs](#)

```
Can you explain the basics of HTML, CSS, and JavaScript as they pertain to making a startup landing page.
```



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```
Please give an overview and detail that would be helpful for a Harvard Business School MBA student who is learning to code for the first time and working on a project to make a startup landing page with VS Code and Github pages.
```

```
Assume they are recopying and pasting the files for each change.
```

### Step 2: Deploy your project to the public internet

Next we're going to deploy your web page to the public internet using Github Pages.

Here's an example prompt to get you started:

*ChatGPT:* [How do I deploy a web page to Github Pages without knowing how to code?](#)

```
I'm a non-technical MBA student at Harvard Business School and don't know how to code.
```

```
I've set up VS Code, and created an index.html landing page for a startup in a folder on my local computer.
```

```
Can you walk me through how to set up an account on Github.com and deploy my page to github pages?
```

Note: If ChatGPT asks you to do anything from the command line, terminal, or “Git” (not to be confused with “Github”) and you're not familiar with those tools, just tell it so and ask it to walk you through how to do it through the web browser or “GUI.”<sup>6</sup>

*Alternatively, you can follow these manual instructions:*

- 1) Sign up for a free account on Github.com.
- 2) Create a new repository. A repository is the top level folder or “directory” where you will store your code on Github.

Your landing page will be `http<your github user name>.github.io/<your repository name>`  
Click the “+” sign in the top right of the page near your profile picture.

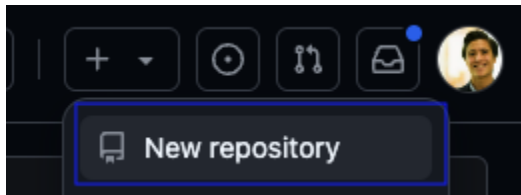
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<sup>6</sup> *ChatGPT:* [What is a GUI?](#)

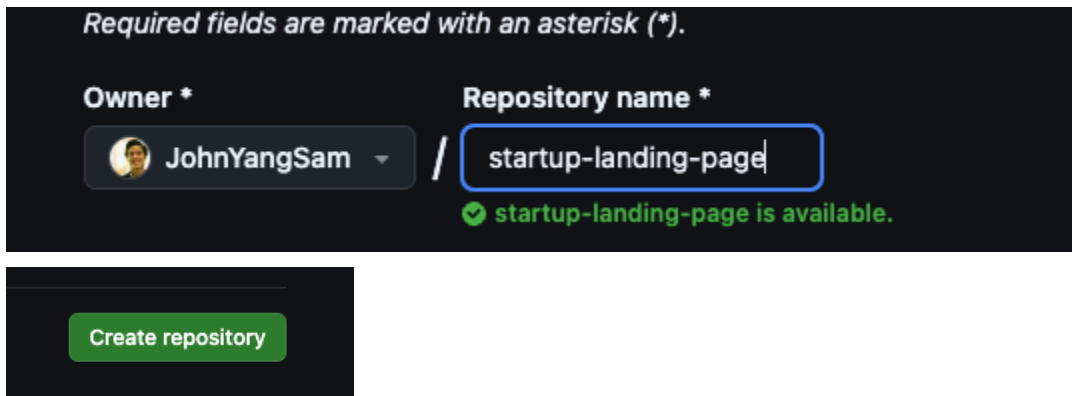
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Click “New Repository”



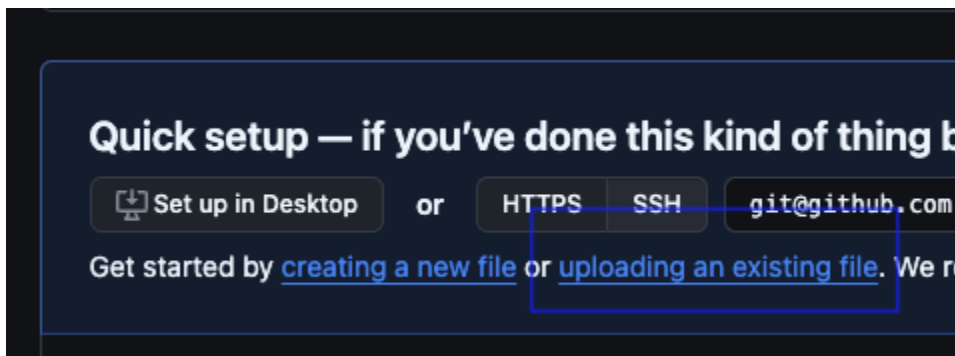
Fill in your desired name and click “Create repository”



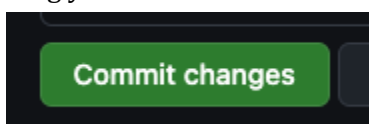
You should be taken to the repository page: <https://github.com/<your username>/<your repository name>>

3) Upload your index.html file to your repository.

Click the “upload an existing file” link in the blue bar in the middle of the page.



Drag your index.html file and click “Commit changes” to save it.

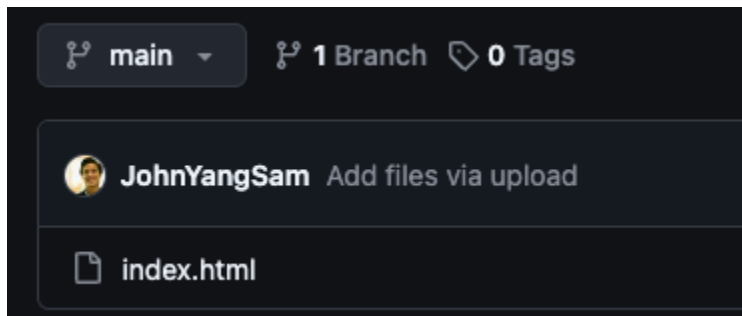


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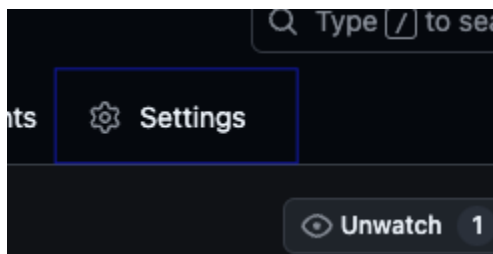
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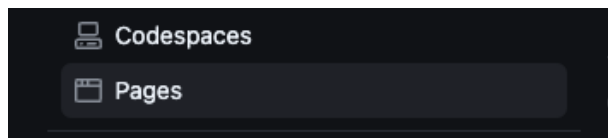
You should see your file in your repository



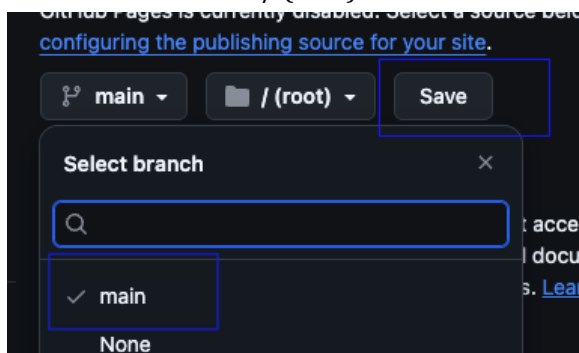
- 4) To turn on Github Pages to display your web page, click the repository "Settings" next to "Insights"



- 5) Click "Pages" in the left hand sidebar under the "Code and Automation" Section



- 6) Make sure the following settings are set:  
Build: "Deploy from a branch" (should be default)  
Branch: "main" and "/" (root)" and click "Save" next to those dropdowns (see screenshot):



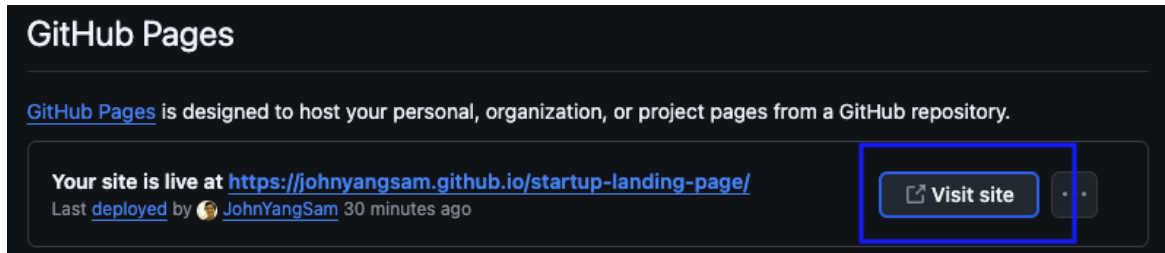
Note: This only needs to be done one time as a setting. Afterwards, you should be able to see your updates once the files have been committed (but it sometimes takes server seconds or requires you to [clear your browser cache](#)).

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- 7) Click “Visit site” in the top right to visit your live website.



- 8) You can test this website to make sure it’s working by sending it to your phone or opening it in private browsing.
- 9) Experiment with Chat GPT to make edits to the page to make the content consistent with your startup idea. Don’t worry about getting something perfect, just something that distinguishes your page as belonging to your startup.

Here’s a ChatGPT prompt and conversation to get you started.

ChatGPT: [Iterating on a startup landing page](#)

```
I'm building a startup landing page for a company called <name> that will be <describe your startup>.

Can you help me create the landing page?
```

### Hints:

*Hint 1: If you are updating your index.html file on Github but the updates aren’t showing up in the browser, the answer is early in the conversation.*

*Hint 2: If your chat is getting unruly, try starting a new chat and explaining, copying, and pasting the relevant context in the new chat.*

*Hint 2: If you’re lost, at ChatGPT to explain, start smaller, and ask it for “all the code in one file.”*

**Checkpoint:** If this is your first time writing code - congratulations!

**You’ve just built and deployed a fully working webpage to the public internet!**

Submit your ChatGPT thread and public website here:

[Submission 2 - Public App Link and Chat](#)

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### Part 3: How Far Can You Go With AI?

*Building out your experiment with ChatGPT*

Now that you have a full landing page accessible to potential customers, it's time to build further upon your website!

If this is your first time coding, don't worry about getting something perfect, the goal is to get more practice using the tools and exploring what is possible.

We'll have a show and tell and discussion in class:

**Non-Technical MBAs:** Choose at least 2-3 of the below "Choose Your Own Adventure" enhancements and try to implement them in your startup landing page. Try out some "Bonus Points" if you're feeling ambitious.

**Technical MBAs:** If you're technical, see how far you can go in making something that can move forward your experimentation. Feel free to go to town on the landing page or deploy or share something more sophisticated (e.g. a prototype app hosted on AWS or a mobile application) and include the link in the "Additional Comments" section on the final submission. How can you help show your peers what is possible in a short time with AI tools?

**Make sure to submit your final reflection in the checkpoint at the end of the section.**

#### Step 1: Choose Your Own Adventure

Here are a few ideas of how to get started improving your landing page.

**Text Content:** Refine the content or sections of your site by asking ChatGPT to edit the HTML or asking it how to do it with yourself manually in tandem.

**Styling in CSS and JavaScript:** Try adding more sophisticated styling to your website or some interactivity with JavaScript animations. Ask ChatGPT to move around and change elements on the page to your liking. Try giving it a screenshot and link to a site you want it to emulate.

**Links:** Get your links working to external or internal pages you create (see: "Multiple Pages" below).

**Embed a Form:** Try embedding form (e.g. Google Forms, Typeform, or another service) to collect leads.

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**Images and Video:** Use ChatGPT to learn how to link to asset files like images and video. Create some new images to use on the site by asking ChatGPT.<sup>7</sup>

**Favicon:** Change the little image you see on the browser tab by asking ChatGPT to generate and walk you through adding a favicon.

**Multiple Pages:** Add multiple pages to your website asking ChatGPT how to create the pages, upload to Github's web interface and link to them properly in index.html.

**Different Personas:** See how ChatGPT responds differently when you change the persona: e.g. "You are a... front end web developer / expert designer / business person" and ask it the same prompts.

**Add Analytics:** Create a Free Google Analytics and/or FullyStory account and have ChatGPT walk you through setting up real time tracking and user session recording.

**Edit Your SparkRockets Page:** If you [saved your SparkRockets webpage as an html page and accompanying file in Part 1](#), you can try uploading that page and folder of assets to Github as a starting point and using ChatGPT to edit its content.<sup>8</sup>

### Step 2: Bonus Points

Here are some additional ideas of additional that can make for an interesting show and tell in class.

#### Non-Technical to Semi-Technical

**Make a Promotional Video** - Create a promotional video for your startup using a tool like [HeyGen](#), [Hedra](#), or [Runway](#). You can build the script in ChatGPT.<sup>9</sup> Include it in your site<sup>10</sup> or link it in your Additional Comments section in Submission 3.

**Make a Jingle** - Create a "jingle" song about your startup with a tool like [Suno](#). Hint: You can use ChatGPT to help write the script. Add it to a section of your site or link it in the Additional Comments section in Submission 3.

**"Great Artists Steal"** - Experiment with how quickly you can iterate on your website by pulling example code from screen shots or inspect element on other website references.

**Learn Git with ChatGPT** - Use ChatGPT to learn how to use the command and Git to manage code like a professional software engineer.

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<sup>7</sup> ChatGPT: [How can I copy the raw link for a video I've uploaded to github?](#)

<sup>8</sup> Note: This may be tricky if you don't have prior coding experience.

<sup>9</sup> Tip: You can generate a script with different tones by referencing an ad studio, director, or movie. E.g. Write a pitch script like Aaron Sorkin, Stephen Spielberg, or [Sandwich Video](#).

<sup>10</sup> ChatGPT: [How can I copy the raw link for a video I've uploaded to github?](#)

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**Try Out Another AI Tool** - Try using another LLM like [Anthropic's Claude AI](#), web development tools like [Create.xyz](#), or a LLM business model generator like [ChatAgency](#) and be prepared to share the results with the class.

#### Technical

**Go to Town on Your Landing Page** - See how polished and valuable you can make your landing page to move forward your testing. Try out using/learning a new technology with ChatGPT.

**Use Another AI Tool** - Trying using another AI tool like [Aider](#) to develop your submission.

**Build a functional prototype** - Test a specific hypothesis / feature and deploy it to a web service such as AWS. Include the link in your Additional Comments section of Submission 3.

**Build a Utility Tool** - Build something to help move forward your workflow or product market fit. E.g. a scraper for public data, a command line program to download videos, transcribe, and summarize content in an area you're researching, etc. Bash scripts are a great use case. Record the video and link it in your Additional Comments section of Submission 3.

**Build Something Else** - What else can you build with AI that could benefit your product market fit process and help your peers see the opportunities made possible with AI?

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**Checkpoint:** Once you've completed Part 3, submit your final reflection and any other links you want to share here:

[Submission 3 - Reflections on Building with AI](#)

#### Step 3: Discussion Questions

*What worked well in using ChatGPT for coding?*

*What were the most significant frustrations you encountered?*

*What strategies did you develop to get more from ChatGPT?*

*What surprised you during the coding process?*

*How has this exercise changed your perspective on using AI tools in prototyping?*

*What are the risks and opportunities of relying on AI for coding and prototyping?*

*What recommendations would you give to others starting out with AI for coding?*



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### Classroom Exercise

Please complete submissions by Sunday, 10/27 at 11:59pm so they can be reviewed before Monday's class.

Come prepared to contribute to the classroom discussion by bringing what you've built, discussion questions, and takeaways from the experience.

### Tentative Schedule

- Orientation
- Show and Tell
- How to Use AI to Become a 10x founder
- Concluding Remarks

### Office Hours

We'll hold office hours for those looking for tips, tricks, help, or who are generally interested in some of the other ways to leverage ChatGPT and other AI tools to get things done.

[John YS](#) (+ TBD some AI engineers) will host an open Google Meets Office Hours.

Check the Google spreadsheet and check it for updates. **Tentative times are below, but we're likely to update them!** If no one is signed up for a slot, 1 hour before, then it will be canceled.

[+ HBS LTV AI Workshop Office Hours Sign Up](#)

Day	Date	Tentative Times (check the sign up spreadsheet in case we expand / change these)
Tuesday	10/22	6:00pm - 9:00pm ET TENTATIVE
Wednesday	10/23	12:30pm - 5:00pm ET TENTATIVE

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### Additional Resources and Readings

#### Prompting

[OpenAI's Guide to Prompt Engineering](#)

[Prompt Engineering Guide](#)

[ChatGPT Prompt Engineering for Developers](#)

#### General Chat Tools

[ChatGPT](#)

[Claude](#)

[How to Use ChatGPT in Any Google Spreadsheet](#)

#### Media Tools

[HeyGen](#) (Video avatars)

[Hedra](#) (Video avatars)

[Runway](#) (Video and images)

[Stability](#) (Images)

[Midjourney](#) (Images)

[Dall-E \(ChatGPT\)](#) (Images)

[Suno](#) (Music)

#### Business Model Generation Drafting Tools

[SparkRockets](#)

[ChatAgency](#)

#### Customer Feedback

[Synclly](#) (HBS 2021)

#### Other

[Create.xyz](#) (Web development)

[V0.dev](#) (Web development)<sup>11</sup>

[Aider](#) (Open source LLM coder)

[Soleda.ai](#) (Data cleaning with LLMs)

[Skim.ai](#) (Research paper summarization)

[Using ChatGPT in Finance Workflows](#)

[AI and I Podcast](#) (Podcast interviewees explain how they use AI in everyday workflows)

[Eric Schmidt on AI in Stanford's 2024 Econ295/CS323 Class](#) (What might be in store for the future)

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<sup>11</sup> Example using V0.dev by [Sherry Jiang: Google Finance Dashboard with V0.Dev](#)